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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Mitsuo Honma

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EXAMINER

ROSATI, BRANDON MICHAEL

ART UNIT

PAPER NUMBER

3744

MAIL DATE

DELIVERY MODE

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/585,319	Applicant(s) HONMA, MITSUO	
	Examiner BRANDON M. ROSATI	Art Unit 3744	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 06 July 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-36 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-36 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 06 July 2006 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>7/6/2006</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Drawings

1. New corrected drawings in compliance with 37 CFR 1.121(d) are required in this application because Figure 1, for example is extremely shaded and hard to read. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance. No new matter should be added.

Specification

2. The title of the invention is not descriptive. A new title is required that is clearly indicative of the invention to which the claims are directed.

The following title is suggested: HEAT SINK WITH METAL WIRE COIL FINS.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 1-5, 10, 11, 14-16 and 21-24 are rejected under 35 U.S.C. 102(b) as being anticipated by Andersson et al. (U.S. Patent No. 3,232,344).

Regarding claim 1, Andersson et al. disclose in Figures 2, 3a, and 3b, a heat sink (i.e. heat exchanger) comprising fins (2) made of a densely coiled metal wire having a contact part and a thermal conductive base (1) (Column 2, lines 10-54).

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Regarding claim 2, Andersson et al. disclose in Figures 2, 3a, and 3b, fins which have thermal coupling between the contact parts of the coil.

Regarding claims 3, 16, 21, and 24 Andersson et al. disclose in Figures 2, 3a, and 3b, metal wire coils which are right handed and left handed (see Figures 3a and 3b).

Regarding claims 4, 5, and 22 Andersson et al. disclose in Figures 2, 3a, and 3b, fins (2) which are disposed relative to the base in a standing manner.

Regarding claims 10, 11, and 23 Andersson et al. disclose in Figures 2, 3a, and 3b, flat surfaces of the fins (i.e. bottoms) arranged parallel to the base plate.

Regarding claim 14, Andersson et al. disclose in Figures 2, 3a, and 3b, a heat sink (i.e. heat exchanger) comprising fins (2) made of a densely coiled metal wire (Column 2, lines 10-54).

Regarding claim 15, Andersson et al. disclose in Figures 2, 3a, and 3b, a heat sink comprising a base and fins of a metal wire coil (2) with an agglutinant (i.e. weld) (Column 2, lines 10-54).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

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1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

7. Claims 6-9 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (U.S. Patent No. 3,232,344) in view of Marukasa (JP 05166982 A).

Regarding claims 6 and 7, Andersson et al. disclose all the claimed limitations except having the fins be disposed in a groove. However, Marukasa disclose in Figure 1, fins which are in a groove in the base plate. Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Andersson et al. with the groove in the base plate of Marukasa, because this would allow for more surface area of the fins to be in contact with the base plate, thus increasing the overall amount of heat transfer.

Regarding claims 8 and 9, the combined teachings of Andersson et al. and Marukasa disclose fins which are thermally coupled to the groove in the base plate (see Marukasa).

8. Claims 12, 13, 17, and 25-27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (U.S. Patent No. 3,232,344) in view of Kimura (JP 03014300 A).

Regarding claims 12 and 13, Andersson et al. disclose all the claimed limitations except utilizing ferrite powder in the heat sink. However, Kimura discusses the concept of utilizing a heat sink (see abstract). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Andersson et al. with the ferrite powder of Kimura because the powder would allow for noise to be shielded without losing heat sink effect. It is noted that Kimura teaches a general teachings of ferrite powder on the base (i.e. plate) and thus the ferrite powder would fill the voids between the fins and the base plate.

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Regarding claims 17 and 25-27, the combined teachings of Andersson et al. and Kimura disclose utilizing ferrite powder in a heat sink (see Kimura). It would be obvious to one of ordinary skill in the art to utilize the ferrite powder on the fins, since the fins are part of the heat sink and by doing so the electromagnetic wave shielding of the fins would also be increased.

9. Claims 18-19 and 28-33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (U.S. Patent No. 3,232,344) in view of Fromson et al. (U.S. Patent No. 5,833,931)

Regarding claims 18 and 28-30, Andersson et al. disclose all the claimed limitations except having the wire be made of aluminum and treated with anodic oxide. However, Fromson et al. disclose the concept of having aluminum fins coated with anodic oxide (Column 1, lines 45-67 and (Column 2, lines 57-67). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Andersson et al. with the coated fins of Fromson et al. because this would help to protect the fins from corrosion which is a well known advantage of anodic oxide.

Regarding claims 19 and 31-33, the combined teachings of Andersson et al. and Fromson et al. disclose fins made of an anticorrosion metal (i.e. titanium) (see Fromson Column 2, lines 57-67).

10. Claims 20 and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Andersson et al. (U.S. Patent No. 3,232,344) in view of Luo (U.S. Pub. No. 2004/0100771 A1).

Regarding claims 20 and 34-36, Andersson et al. disclose all the claimed limitations except having a heat dissipative coating film on the surface of the metal wire. However, Luo discloses the concept of coating a metal wire (i.e. fin) (5) with a coating (i.e. thermally

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conductive material) (Paragraph [0030]). Hence, it would have been obvious to one of ordinary skill in the art, at the time the invention was made, to modify the teachings of Andersson et al. with the coated fins of Luo because the coated fins would have increased thermal properties which would be capable of dissipating more heat and thus increasing the overall efficiency of the device.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Nishishita et al. (U.S. Patent No. 5,203,402) discusses a heat exchanger.

Murata et al. (U.S. Patent No. 6,650,529 B1) discusses a coil with ferrite.

Joshi et al. (U.S. Patent No. 6,615,910) discusses an air cooled heat sink.

Barten (U.S. Pub. No. 2003/0155103 A1) discusses a folded fin.

Honma (U.S. Pub. No. 2007/0223195 A1) discusses a heat sink.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to BRANDON M. ROSATI whose telephone number is (571)270-3536. The examiner can normally be reached on Monday-Friday 8:00am- 4:30pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Cheryl Tyler or Frantz Jules can be reached on (571) 272-4834 or (571) 272-6681. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications

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may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

BMR
12/17/2009

/Cheryl J. Tyler/
Supervisory Patent Examiner, Art Unit
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